

What is claimed is:

1. A multi-hull surface vessel, said vessel comprising:

a main hull;

at least two lateral hulls disposed on opposite sides of  
said main hull with a surface deck disposed  
therebetween;

an engine mounted in said main hull, said engine being  
capable of producing exhaust;

a plurality of microbubble injectors disposed in exterior  
areas of each of said lateral hulls; and

a plurality of conduits in fluid communication with said  
engine and microbubble injectors;

whereby upon an operation of said engine, exhaust produced  
by said engine is directed by said conduits to said  
microbubble injectors thereby effecting generation of  
microbubbles on the exterior areas to occasion  
microbubble drag reduction on said lateral hulls.

2. The multi-hull vessel in accordance with claim 1:

wherein said engine is capable of producing cooling air with  
said conduits directing the cooling air to said  
microbubble injectors thereby effecting microbubble  
generation on the exterior areas.

3. The multi-hull vessel in accordance with claim 1 wherein  
said microbubble injectors are limited to the subsurface areas of  
said lateral hulls.

4. The multi-hull vessel in accordance with claim 2 wherein  
said microbubble injectors are limited to the subsurface areas of  
said lateral hulls.

5. The multi-hull vessel in accordance with claim 4 wherein  
said microbubble injectors extend around the bottoms of said  
lateral hulls.

6. The multi-hull vessel in accordance with claim 5 wherein  
said microbubble injectors are spaced along inboard and outboard  
sides of said lateral hulls.

7. The multi-hull vessel in accordance with claim 6 wherein  
each of said microbubble injectors comprises a plate having an

open area in the range of 40-50%, the open area defined by a multiplicity of apertures in the range of  $1/16$  -  $1/8$  inch diameter.

8. The multi-hull vessel in accordance with claim 7 wherein the subsurface areas of said lateral hulls are provided with a non-wetting hull coating.

9. The multi-hull vessel in accordance with claim 4 wherein said microbubble injectors are spaced along one side of each of said lateral hulls.

10. The multi-hull vessel in accordance with claim 9 wherein said microbubble injectors extend around the bottoms of said lateral hulls.

11. The multi-hull vessel in accordance with claim 10 wherein each of said microbubble injectors comprises a plate having an open area in the range of 40 -50%, said open area defined by a multiplicity of apertures in the range of  $1/16$  -  $1/8$  inch diameter.

12. The multi-hull vessel in accordance with claim 2 wherein the subsurface areas of said lateral hulls are provided with a non-wetting hull coating.

13. The multi-hull vessel in accordance with claim 2 wherein each of said microbubble injectors comprises a plate having an open area in the range of 40 -50%, said open area defined by a multiplicity of apertures in the range of 1/16 - 1/8 inch diameter

14. The multi-hull vessel in accordance with claim 13 wherein the subsurface areas of said lateral hulls are provided with a non-wetting hull coating.

15. A system for reducing drag of a hull in a fluid environment, said system comprising:

an engine capable of producing exhaust gas;

a plurality of microbubble injectors disposed in an  
subsurface area of the hull; and

a plurality of conduits in fluid communication with said  
microbubble injectors;

whereby upon operation of said engine, exhaust produced by  
said engine is directed by said conduits to said  
microbubble injectors, thereby effecting generation of

microbubbles on the subsurface area to occasion  
microbubble drag reduction on the hull.

16. The system in accordance with claim 15:

wherein said engine is capable of producing cooling air; and

wherein said conduits direct the cooling air to said  
microbubble injectors thereby effecting microbubble  
generation on the subsurface area.

17. The system in accordance with claim 16 wherein the  
subsurface area is provided with a non-wetting hull coating.

18. A multi-hull surface vessel, said vessel comprising:

a main hull;

at least two lateral hulls disposed on opposite sides of  
said main hull with a surface deck disposed  
therebetween;

a means for generating power for said vessel; and

means for reducing drag on said lateral hulls in relation to  
said power generating means.